Appl Nanosci (2011) 1:1–5
DOI 10.1007/s13204-011-0011-6

INTRODUCTION

Introducing the editors

International Editor-in-Chief

Sir Fraser Stoddart (b 1942) received his BSc (1964) and PhD (1966) degrees from Edinburgh University. Stoddart is one of the few chemists of the past quarter of a century to have created a new field of organic chemistry—namely, one in which the mechanical bond is a pre-eminent feature of molecular compounds. He has pioneered the development of the use of molecular recognition and self-assembly processes in template-directed protocols for the syntheses of two-state mechanically interlocked compounds (bistable catenanes and rotaxanes) that have been employed as molecular switches and as motor-molecules in the fabrication of nanoelectronic devices and NanoElectroMechanical Systems (NEMS).

His work has been recognized by many awards, including the Carbohydrate Chemistry Award of The Chemical Society (1978), the International Izatt-Christensen Award in Macrocyclic Chemistry (1993), the American Chemical Society's Cope Scholar Award (1999), the Nagoya Gold Medal in Organic Chemistry (2004), the King Faisal International Prize in Science (2007), the Tetrahedron Prize for Creativity in Organic Chemistry (2007), the Albert Einstein World Award of Science (2007), the Foresight Nanotech Institute's Feynman Prize in Nanotechnology (Experimental) (2007), the American Chemical Society's Cope Award (2008), and the Royal Society's Davy Medal (2008). He was one of the ca. 20 research scientists to be invited by the Royal Swedish Academy of Sciences to participate in the Nobel Jubilee Symposium on "Frontiers of Molecular Sciences" in Stockholm in December 2001. In 2005, he received the Honorary Degree of Doctor of Science from Birmingham University, as well as being the recipient of the University of Edinburgh Alumnus of the Year 2005 Award. He received an Honorary Degree of Doctor of Science from the University of Twente (2006), Sheffield University (2008) and Trinity College Dublin (2009) and similarly honored at the University of St Andrews in 2010. He is currently on the international advisory boards of numerous journals, including Angewandte Chemie and the Journal of Organic Chemistry. He is the editor of the Royal Society of Chemistry Series of Monographs on Supramolecular Chemistry. He is a Fellow of the Royal Society (1994), the German Academy (Leopoldina) of Natural Sciences (1999), the American Association for the Advancement of Science (2005), the Science Division of the Royal Netherlands Academy of Arts and Sciences (2006), and the Royal Society of Edinburgh (2008). He was appointed by Her Majesty Queen Elizabeth II as a Knight Bachelor in her 2007 New Year's Honours List for his services to chemistry and molecular nanotechnology.

In addition to being made an Honorary Professor at the East China University of Science and Technology in Shanghai and the Carnegie Centenary Visiting Professor at the Scottish Universities in 2005, Stoddart has been awarded named lectureships by, inter alia, more than 50 universities.

He has also been Middle Rhine (1982), Troisième Cycle en Chemie (1988), and Atlantic Coast (1993) Lecturer. He went on Royal Society Lecture Tours of the USSR and Japan in 1986 and 1987, respectively.

Some measure of the influence and impact of Stoddart's work may be drawn from citation statistics. Six of his >875 publications have been cited over 500 times, 18 over 300, 88 over 100, and 227 over 50. He has an h-index of 94. For the period from January 1997 to December 31, 2007, he was ranked by the Institute for Scientific Information (ISI)

as the third most cited chemist with a total of 14.038 citations from 304 papers at a frequency of 46.2 citations per paper (Subsequently, the ISI ceased publishing their 'Top-Ten' list. He has given over 1,000 plenary/invited lectures. During 40 years, >300 PhD and postdoctoral students have passed through his laboratories and been inspired by his imagination and creativity, and >60 have subsequently embarked upon successful independent academic careers.

Local Editor-in-Chief

Dr. Muhammad Mustafa Hussain is an Assistant Professor in Electrical Engineering program of the Physical Science and Engineering Division of the King Abdullah University of Science and Technology. Dr. Hussain received his PhD in Electrical Engineering (Solid State Electronics) from the University of Texas at Austin in December 2005 with a PhD portfolio in Nanotechnology. He also has two MS in Electrical Engineering and in Electrophysics from the University of Texas at Austin and the University of Southern California, Los Angeles, respectively. Prior to join KAUST, Dr. Hussain has worked as a Process Integration Assignee for Texas Instruments on 45 nm technology and beyond high-k/metal gate planar and non-planar CMOS development. Since January 2008, he has served as the Program Manager of Emerging Technology Program in SEMATECH in Austin, Texas where he successfully led his group to demonstrate Tunneling FET with sub-threshold slope of 46 mV/dec, graphene devices on hafnium-based high-k and sub-100 nm energy reversible Nano-electro-mechanical switch (NEMS). All these pioneering demonstrations in the respective fields were supported by the United States Defense Advanced Research Project Agency (DARPA). Since January 2005, Dr. Hussain has authored one book chapter, 31 journals and 54 conference papers in highly acclaimed peer reviewed publications (including Journal of Applied Physics, Applied Physics Letters, IEEE Transaction of Electron Devices, IEEE Electron Device Letters, etc.) and conferences (IEEE International Electron Device Meeting, Symposium of VLSI Technology, IEEE Design and Automation Conference, European Solid State and Device Engineering Research Conference, Solid State Device Meeting, etc.). He has given 25 invited talks and tutorials in various conventions (NATO Workshop in Russia, June 2009, SPIE Defense Convention in April 2010, etc.) and in industries. He regularly serves in the Grants Proposal Review Committee funded by the National Science Foundation of USA. Recently, he has been elevated to the Senior Member grade of IEEE for his professional maturity and accomplishments. Only 8% of IEEE's nearly 400,000 members receive this distinction.

Associate Editor-in-Chief

Dr. Abdulrahman A. Al-Muhanna is the Executive Director of National Nanotechnology Center, King Abdulaziz City for Science and Technology (KACST). He also manages KACST/IBM Nanotechnology Center of Excellence. He received his PhD from University of Wisconsin (2000). He has more than 25 scholarly publications and several US patents. He is a natural leader and team builder with proving ability to lead, motivate, and inspire teams to develop and introduce pioneering programs that boost infrastructure, growth, increase project efficiencies, and surpass strategic objectives. He is a member of IEEE and Tau Beta Pi. He is a recipient of Bandar Bin Sultan Award for Excellence in Education Achievement and Scholarship from the government of Saudi Arabia.

Editorial Board Members

Dr. Thomas Anthopoulos obtained his Bachelor of Engineering (BEng Hons) in Medical Engineering and his Doctor of Philosophy (PhD) degree in Physical Electronics from Staffordshire University in UK. In 2001, he moved to University of St. Andrews (UK) to work on the development of dendrimer-based phosphorescent materials and organic light-emitting diodes. In 2003, he joined Philips Research Laboratories in The Netherlands to work on ambipolar organic semiconductors and their application in organic thin-film transistors and organic integrated circuits based on unipolar as well as complementary and complementary-like logic architectures. In 2005, he was awarded Engineering and Physical Sciences Research Council (EPSRC) Advanced Research Fellowship hosted in the Department of Physics at Imperial College London (UK). In October 2007, he was appointed to a Research Councils UK (RCUK) Fellow/Lecturer position and in October 2009 he was promoted to Reader in Experimental Physics in the same Department. His current research interest is focused on the physics of charge transport mechanisms in organics, metal oxides, organic-oxide hybrid semiconductors, as well as graphene and graphene oxide. He is the co-author of several book chapters, over 75 journal articles and several patents/applications. In addition to basic research, he is also involved with activities related to intellectual property protection, technology development and commercialization.

Professor Lynden Archer currently holds the Marjorie L. Hart Chair in Chemical and Biomolecular Engineering. He received the Career Award from the National Science

Foundation, 1996, Dupont Young Professor Award 1996–1999, 3M Company Non-Tenured Faculty Award 1995, and the George Armistead Faculty Fellowship 1999–2000. He is an elected Fellow of American Physical Society. Presently, Prof. Archer is also the Co-Director of KAUST-Cornell Center for Energy and Sustainability. Prof. Archer's research area is polymer liquids which are classified as complex fluids because their properties in external fields depend on a host of variables (e.g., the rate at which the field is applied, field strength, the spatial scale over which field strength changes, time, temperature, etc.). In virtually every case, the source of complexity can be traced to the large size of the constituent molecules and to the finite time-scale on which they respond to change. Archer group uses experiment, theory, and computer simulations to determine how physical chemistry of individual molecules and cooperative motion of large ensembles of molecules influence polymer properties in the liquid state.

Dr. Wei Gao is a Professor of Materials Science and Engineering, and the Coordinator of Advanced and Nano Materials Research Cluster, The University of Auckland, New Zealand. He received his D.Phil. degree from Oxford University UK, and worked at MIT, USA for 5 years as a Research Fellow and Director of Rapid Solidification Lab. His active research covers a wide area including nanomaterials, electronic materials and device applications, thin oxide films, coatings and surface technology, corrosion and high temperature oxidation, and light alloys. He has published 560 refereed research papers, books and patents, and has been invited to give more than 60 keynote and invited talks in international conferences. He is the Fellow of the Royal Society of New Zealand and Institute of Professional Engineers NZ, and sits in the Editorial Beard of eight international journals. He has received many prestigious awards including the "R. J. Scott Medal", "James Cook Award" and "Distinguished Materials Scientist of China"; and also been invited as Honorary Professor by a number of overseas Universities including Shanghai Jiao Tong University, University of Science and Technology Beijing, and Wuhan University of Technology.

Prof. Hartmut Hillmer received the PhD degree (summa cum laude) in physics from Stuttgart University in 1989. After that, he worked for nearly 10 years in industry on design, fabrication and characterization of tunable and high modulation bandwidth semiconductor lasers at the Research Center German Telekom, Darmstadt. In 1991, he became a guest scientist at NTT Optoelectronic Laboratories, Japan. Since 1999, he is a director of the Institute of Nanostructure Technologies and Analytics (Technological Electronics) at the University of Kassel. Since 2004, he has been coordinating the participation of the University of Kassel in the NanoNetzwerkHessen. Furthermore, he is the Chair of the NanoImprint Consortium Hessen (NIH) and a member of the scientific board of the cooperation Kassel, Shanghai since 2007. Since 2010, he is program chair of the Master Course "Optical Nanotechnologies Engineering". He has been awarded the "Grand Prix European for Innovation Awards" in 2006 and for the "Hess Cooperation Award" for technology transfer into industry in 2009. His research interests are: nanosensors and -actuators for smart personal environments; micromirror-arrays in intelligent windows for light steering, energy savings, energy supply and medical care; non-invasive optical biomarker detection in breath and tissue; VOC monitoring; photonic crystals and microsystem technology.

Prof. Byung Hee Hong is an assistant professor in the Department of Chemistry and SAINT of SungKyunKwan University, Suwon, Korea. He leads the SKKU Graphene Research Lab. His work on large scale production of flexible graphene has received worldwide recognition. His accolades include: 2009 Posco TJ Park Science Fellowship, 2010 Joong-Ang Daily-Yumin Award of Science and 2010 SKKU Young Fellowship. His scholarly articles are regularly published in acclaimed journals like Science and Nature.

Prof. Dusan Losic completed PhD in Chemistry (Nanotechnology) in 2002 at Flinders University, Adelaide, South Australia, working on development of enzyme biosensors based on self-assembled monolayers. In 2003, he joined the Neurochemistry research group at Monash University, Melbourne, Australia, where he studied the impact of the surfaces on the conformation changes and aggregation of amyloid peptides related to neurodegenerative diseases using atomic force microscopy. From 2004 to 2006, he worked at Flinders University as a Postdoctoral Research Fellow to study the nanotechnological significance of single cell algae, diatoms. This multidisciplinary project interfacing biology, physics, photonics, biochemistry, microfluidics, mechanics and material science has provided him an international reputation in an emerging area called diatom nanotechnology. In 2007, D. Losic received prestigious Research Fellowship (ARF) form Australian Research Council and currently he is working as Associate Research Professor at Ian Wark Research Institute (IWRI), University of South Australia, one of premier Australian Research Institutes in the field of surface chemistry, colloids and nanotechnology. Prof. Losic has more than 10 years of experience in the field of nanoscience and nanotechnology encompassing several disciplines including chemistry, electrochemistry, material science, engineering, biology and medicine. Research focuses on the development of new nano scale materials with advanced properties and their applications in several areas including medicine (drug delivery and biomedical diagnostics) and environmental protection (molecular separation and biosensing). He published more than 120 peer reviewed journal and conference papers.

Professor Suparna Mukherji is with Centre for Environmental Science and Engineering (CESE), Indian Institute of Technology, Bombay, India. She received her PhD in Environmental Engineering in 1997 from the University of Michigan, Ann Arbor, USA. Her research interest includes biotransformation and toxicity evaluation of complex organic pollutants, bioremediation, fate and transport of pollutants in aquatic and subsurface systems, physico-chemical and biological treatment processes, hazardous waste minimization and pollution prevention, environmental statistics and design of experiments, bioaerosols, environmental application of nanomaterials. She is a winner of National Women Bioscientist Award (Junior Category), DBT New Delhi, 2009 and AICTE Career Award for Young Teachers, AICTE, New Delhi, 2000.

Dr. Masaaki Niwa was born in Osaka, Japan in 1955. He received his B.S. and M.S. in Electrical Engineering from Kanazawa University, Japan and PhD in Applied Physics from Osaka University, Japan. After joining Matsushita Electric Industrial (what is now Panasonic), Dr. Niwa had engaged in the variety of R & D activities such as atomic scale control of Si surface as well as ultra-thin SiO_2/Si interface including its reliability physics, and developments of photoelectric thin-film for imaging device, advanced gate stack process for 45- and 32 nm-CMOS which have been commercialized in 2007 and 2010, respectively. For these achievements, he moved ahead on worldwide collaboration with IMEC, SEMATECH, Stanford University and UT Austin concerning material science on high-k/metal gate stack system. He also served as a visiting professor at Katholieke Universiteit Leuven in Belgium for 2 years from 2005. From 2011, Dr. Niwa made a career change to Graduate School of Pure and Applied Sciences at University of Tsukuba as a professor. He is currently researching advanced electronic functional devices based on Si technology under multidisciplinary approach as well as driving forward the cultivation of human resources at University. Prof. Niwa also has been contributing in variety of major academic activities such as General Chair of Symposium on VLSI Technology, as well as executive committee member of IEDM, IRPS and SISC.

Professor Suprakas Sinha Ray is Chief Researcher and Director of the DST/CSIR Nanotechnology Innovation Centre, National Centre for Nano-Structured Materials, Pretoria, South Africa. He received his PhD degree in Physical Chemistry at the University of Calcutta in 2001 and was a recipient of the "Sir P. C Ray Research Award" for the best PhD work. After 3 years of postdoctoral experience at Toyota Technological Institute (Toyota Motor Corporation) in Japan, he spent two and half years as Research Scientist at the Chemical Engineering Department, Laval University, Canada. During end of 2006, he joined as Nano-Science Group Leader, CSIR Materials Science and Manufacturing, South Africa. In 2007, he has been promoted as a Chief Researcher (level 2, highest position within CSIR S&T base) and Director of the National Centre for Nano-Structured Materials, CSIR, South Africa. Sinha Ray's current research focuses on polymer-based advanced nano-structured materials and their applications. His honours and awards include Global Start Award 2011 from the American Ceramic Society, CSIR MSM Prestigious Established Researcher Award (2010), Extraordinary Professor at the Department of Chemistry, Free State University, South Africa (2009), Prestigious CSIR President's Award (2008), CSIR MSM Director's award (2008), and JSPS Postdoctoral Fellowship from the Japanese Government (2002). Currently, he is serving as an Associate Editor of the Journal of Nanoscience and Nanotechnology, Advanced Science Letters, International Journal of Plastic Films and Sheeting, Global Journal of Organic Chemistry and Applied Nanoscience. He is one of the active and highly cited authors in the field of polymer-based nanostructured materials (in last 10 years his articles cited more than 5,000 times), and his work has been featured in various international journal cover pages in 13 different occasions. Recently, he has been rated as a Top 50 high impact chemist in the world (Feb. 2011, Thomson Reuter). So far he has been given more than 30 keynote/invited presentations in various international conferences and organized/co-organized number of international conferences. Sinha Ray is the author of 11 book chapters on various aspects of polymer-based nano-structured materials and their applications, and author and co-author of 35 articles in referred international conference proceedings; and 113 articles in international journals and patents.

Dr. John Zhang is an Associate Professor at the University of Texas of Austin (UT Austin) in the Department of Biomedical Engineering, joint affiliations with Institute for Cellular and Molecular Biology (ICMB), Microelectronics Research Center and Texas Materials Institute. He received his PhD in electrical engineering from Stanford University, California in 2004, and was a Research Scientist of Systems Biology in the Media Lab at Massachusetts Institute of Technology (MIT), Cambridge, before joining the faculty at UT Austin in 2005. Zhang laboratory is developing integrated photonic microsystems (MEMS, micro-electro-mechanical systems), semiconductor chips and nanotechnologies for imaging, sensing and regulating cellular processes critical to healthcare, environmental and defense applications. Dr. Zhang has invented several unique methods to characterize multiscale biology interfaces using silicon photonic sensors on probe. His early efforts to provide massively parallel micrograting-embedded cantilevers for force measurement on self-assembled embryos and cells may potentially lead to significant breakthroughs

in genetic studies. His current research focus includes: silicon opto-fluidic devices for circulating tumor cells detection and analysis, phase-modulating scanners for in vivo sub-cellular early cancer diagnosis, and quantum dots-based near-field imaging nanoscopes to detect, for example, the bio-distributions of drug-delivery nano-carriers in tumor. In addition to being the Principle Investigator of many major grants from federal agencies such as NIH, NSF and DARPA, Dr. Zhang was also recipient of many prestigious awards, including: the Wallace H. Coulter Foundation Early Career Award for Translational Research in Biomedical Engineering in 2006, the British Council Early Career RXP Award in 2008, NSF Faculty Early Career Development Program (NSF CAREER) Award in 2009-2014 and DARPA Young Faculty Award in 2010.